Complete 3SAT solver using CUDA
Parallel Processing course assignment 2
Author : Gourab Saha
Contact : gourab1589@gmail.com

To compile : nvcc sat.cu
To run : ./a.out
Dependencies : CUDA enabled GPU, CUDA toolkit 3.2 or above , CUDA driver

This program will randomly generate
Random generated boolean expression with
25 variables and 20 clasues(with 3 literals)
in Conjunctive normal form.

It will check its satisfiability
and if satisfiable it will output
a single valid assignment.

GIT HUB LINK : https://github.com/gourab88/PP_ASSIGN

Main approach

1. Tree based approach .
2. No of levels = no of clauses
3. In each level one clause is unfolded and added to each leave nodes of previous level.
4. If any root-> leaf path exists with no contradiction problem is satisfiable.
5. total tree is divided 4 chunks (each consists of 5 levels).
6. Each chuck is evaluated parallel.
7. Invalid paths are pruned.

8. Combine them to find the existence of a valid path.
9. It’s a complete evaluation of 3SAT problem.